

Attachment 3**SALIENT FEATURES FOR THE PROCUREMENT OF A
TUNEABLE DIODE LASER ABSORPTION SPECTROSCOPIC
GAS MOISTURE ANALYZER****1.0 DOCUMENTATION**

- 1.1 The supplier shall provide published information/specification or generated test data showing how the proposed system compares to the requirement of this specification.
- 1.2 The supplier may use photographs, drawings, sketches, and/or test data to demonstrate compliance to each requirement of this specification.
- 1.3 A complete set of documentation of the operator's manual, service manuals, schematic diagrams, parts list, and any technical information required for the proper operation of the system shall be supplied with the equipment.

2.0 WARRANTY

- 2.1 The supplier shall specify a warranty for the equipment to be provided for at least one year after date of shipment at no cost to the government for parts or labor.

3.0 DELIVERY

- 3.1 The supplier shall specify the length of time required for delivery after an order has been placed.
- 3.2 The supplier shall specify the shipping weight and the cost required to ship the equipment to NASA/Stennis Space Center, SSC, MS 39529, if any.

4.0 DESCRIPTION

- 4.1 Tunable Diode Laser Absorption Spectroscopic Moisture Analyzer for the measurement of moisture in a variety of gas matrices: pure gases e.g., hydrogen, helium, nitrogen, oxygen, argon, carbon dioxide, carbon monoxide, argon, neon, etc.) and gas mixtures (e.g., air) with the option of the user adding additional gases to the analyzer.

5.0 SYSTEM PERFORMANCE PARAMETERS

- 5.1 Moisture measurement range 0 to 100 ppm (at atmospheric pressure), lowest detection level 100 ppb and with an analytical resolution (detectable change) of

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10ppb or less.

- 5.2 10% of reading or ± 100 ppb for the > 20 ppm to 100 ppm range).
Minimum accuracy: $\pm 5\%$ or ± 25 ppb for the 0 to 20 ppm measurement range.
- 5.3 Response time, 2 minutes or less to attain 90% of an upward step change.
- 5.4 Must be configured with safety devices / hardware to process hydrogen gasses safely.
- 5.5 Sample inlet pressure: 5 psig or less to ≥ 30 psig.
- 5.6 Backlit display with high resolution output and a 100 ppt display resolution
- 5.7 Analyzer must provide internal diagnostics, data logging and downloading, graphing and automated maintenance log and a minimum of four visual alarm indicators for moisture levels. CE conformance required.
- 5.8 Each analyzer will be factory calibrated using NIST traceable gas standards. A calibration report / certificate is required for each analyzer.
- 5.9 The analyzer must provide scale factor control to permit use in various background gasses. Sample flow ranges 0.5slpm to 4 slpm @ 20 psig or lower.
- 5.10 The system shall be equipped with a RS-485 or RS232 communications port and analog outputs 0 to 10 VDC and 4 to 20maDC.
- 5.11 Less than 5 minutes recovery time from a 4 ppm upset to within 100 ppb of previously stable reading.
- 5.12 Analyzer must come equipped with stainless steel (sample) delivery lines.
- 5.13 Input power 110VAC @ 60 Hz.